

Jeffrey Sohl, Director, Center for Venture Research, Peter T Paul College of Business and Economics, University of New Hampshire

When Christopher Columbus set sail in 1492 for the trade route to the West Indies he may have inadvertently launched the first angel backed venture. Queen Isabella and King Ferdinand were wealthy individuals with an interest in financing a high risk venture, they were seeking a financial return and without their financial backing the voyage would not have taken place. Fast forward to 1874, when Alexander Graham Bell found that bank officers thought that the idea of providing a loan to a company without any reliable assets was a foolish one. Recognizing an opportunity, Boston attorney Gardiner Green Hubbard and leather merchant Thomas Sanders of Salem, Massachusetts put up the equity capital to start the Bell Telephone Company of Boston (Sohl, 2003a). Moving forward 100 years, in 1976 Anita Roddick was searching for capital to open her second store in the UK and she was rejected by her bank for financing. Ms. Roddick turned to a private investor, Ian McGlenn, who invested the 4000 pounds sterling she needed. She opened that second store and so began the development of the Body Shop, a corporation with over 700 stores today. Mr. McGlenn also took a 50 per cent ownership share in the company (Sohl, 2012). In 1998/99 a college friend tried to introduce a well-known Silicon Valley venture capitalist to “these two really smart Stanford students writing a search engine.” Students? A new search engine? In the one of the most important investment decisions, the venture capitalist asked his friend, “How can I get out of this house without going anywhere near your garage?” (<https://www.bvp.com/portfolio/anti-portfolio>). Instead an angel investor, Andreas Bechtolsheim, saw differently in Larry Page and Sergey Brin and invested \$100,000 in their start-up they called Google.

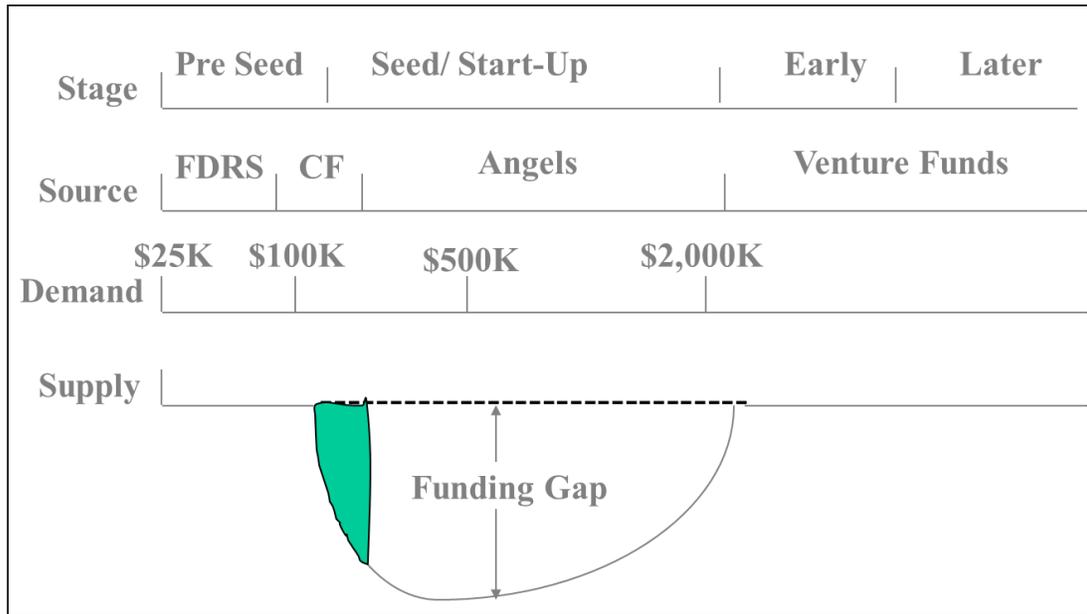
In the United States high growth entrepreneurial ventures hold the greatest potential for innovation, commercialization of technology and sustainable economic development. These entrepreneurial ventures are also the major source of job creation. Impeding the development of these ventures is the inability to attract debt capital in the early stage, which is primarily due to the lack of collateral based assets and the high risk. Given these circumstances equity is the primary source of high risk growth capital for these entrepreneurial ventures and the inherent market inefficiencies in securing this high risk capital exacerbates the difficulty in obtaining growth capital for these promising entrepreneurial ventures.

Financial theory is predicated on the assumption of efficient capital markets with fully informed buyers and sellers and low transaction costs. Under this assumption all relevant information about sources of funds and investment opportunities is available to all buyers and sellers of capital (Sohl, 2003b). For the established firm, financial markets supply a complete variety of financing instruments, with these markets being relatively accessible and the owner/manager is left to decide the optimum mix of a financial structure based on the cost of capital. For the high growth entrepreneurial firm, this supply assumption does not hold, causing systematic market mismatches at particular stages of development of the fast growth firm (Brophy, 1997). These market imperfections, prevalent in the seed and start-up capital market, lead to two types of market inefficiencies: an information gap and a capital gap. For start-up companies the

entrepreneur is the only truly informed individual in the entrepreneurial ecosystem, especially with respect to the most important assets of the start-up, the entrepreneur's skill set and the ability of the founding team. The investor is faced with asymmetric information in that the information they need to make an informed decision is held by the individual (the entrepreneur) who stands to gain the most from the investment. In addition quality deal flow is also not readily available due to this information asymmetry. An efficient market implies an open and timely flow of reliable information concerning financing sources and investment opportunities. In the angel and venture capital market, with the suppliers of capital facing an information gap and the need to maintain quality deal flow, information flows very inefficiently. Compounding these difficulties is the general lack of high risk start-up capital to fill the gap between the needs of start-up ventures and the suppliers of seed and start-up capital. High growth ventures need patient, value added equity capital to fuel growth. Under efficient market conditions capital flows from the suppliers of this capital, angels and venture capital funds, unimpeded to the demand side, the high growth entrepreneurs. The market has many promising entrepreneurial ventures that do not receive the critical seed, start-up and/or early stage capital necessary to move promising technology from the laboratory to the marketplace (Becker-Blease and Sohl, 2015). Facing this information and capital shortage an entrepreneur's search for equity capital and an investor's search for a quality investment opportunity with a return commensurate with the high risk, is often a time consuming and costly process, resulting in missed market opportunities. One need look no further than the superior advancements of the past that have failed to achieve successful commercialization and market penetration: some of the more well-known examples are the Tucker automobile, which in the 1940's introduced the padded dash board, disk brakes and safety glass, the Betamax with its superior technology over the VHS, and the Visicalc spreadsheet. There are numerous others that did not even reach the collective consciousness beyond the scientific community (Sohl, 2003b).

There are three sources (two major) of private equity capital for business ventures: equity crowdfunding, business angels and venture capital funds (Figure 1). While there is some overlap among these three sources they essentially occupy different facets of the capital market for entrepreneurial ventures. Equity crowdfunding (Table 1) is a relatively new phenomenon that has only been recently implemented to any meaningful degree. While equity crowdfunding has the potential to increase the flow of capital to early stage entrepreneurial ventures there exists potential impediments to this capital flow. Misguided buyers, severe asymmetric information and potentially troubling terms and conditions all may provide significant hurdles to growth in the equity crowdfunding market. In addition, the lack of liquidity, even for a successful investment, and a crowded cap table could have a potentially deleterious impact on later rounds of angel and venture capital, which would in turn impede growth of the venture beyond the start-up stage. Thus, a reasonable implementation strategy for equity crowdfunding would be the adoption of a cautious approach and one that has a centerpiece of accurate, and required, data collection from all the equity crowdfunding portals throughout the investment process from proposal, funding, subsequent rounds and exit.

FIGURE 1. Equity Capital for Entrepreneurs



Source: Center for Venture Research

TABLE 1. Equity CF (since 2013)

| | |
|----------------|-----------|
| Success rate | 19.6% |
| Average asked | \$2.0 M |
| Average raised | \$210,000 |
| Conv. Debt | 21% |
| Debt | 7% |
| Equity | 72% |

Source: Crowdnetics

Business angels represent the largest, and oldest, source of seed and start-up stage equity capital for the high growth entrepreneurial ventures (Figure 1). The typical deal size for angels is under \$1 million although syndication with some small venture capital funds or angel/venture capital hybrid groups does occur for those deals in the \$1 to \$2 million range. The US angel investor market in 2015 made total investments of \$24.6 billion (Table 2), an increase of 1.9% over 2014 (Sohl, 2016). A total of 71,110 entrepreneurial ventures received angel funding in 2015 and the number of active investors in 2015 was 304,930 individuals. The average angel deal size in 2015 was \$345,390, an increase of 5.1% from 2014, and the average equity received was 14.9% with a deal valuation of \$2.32 million (Sohl, 2016). The decrease in valuations over the last three years indicates a continuing market correction in valuations. The angel market in the United States experienced much volatility over the last decade and a half, marked by an expansionary period

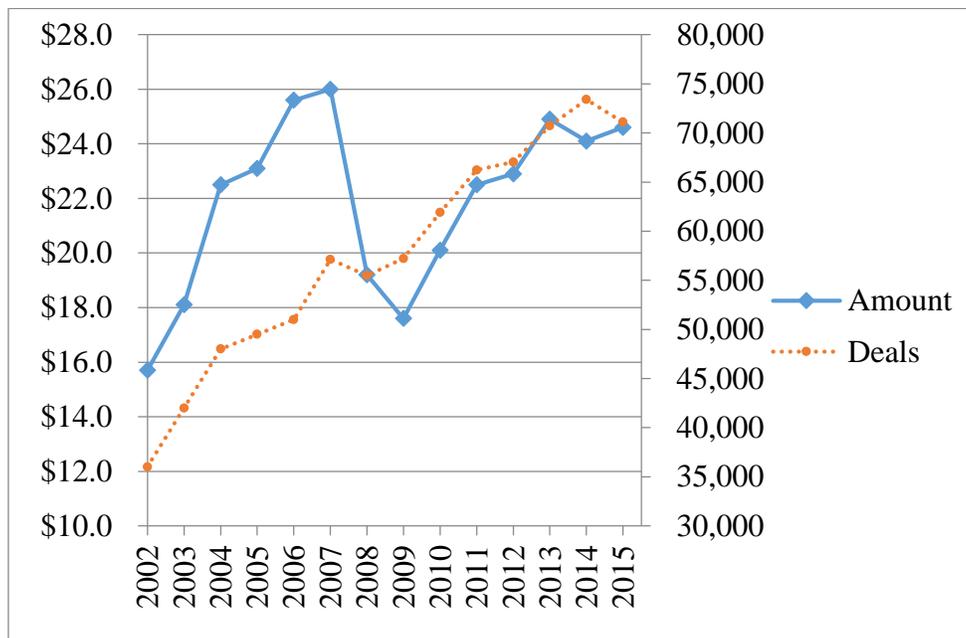
bookmarked by two (1999/2000 and 2007/2008) sharp contractions. However, the \$24.6 billion of investments in 2015 is a robust amount and is close to the market high of \$26.0 billion that occurred in 2007 (Figure 2). For angels, the yield rate is defined as the percentage of investment opportunities that are brought to the attention of investors that result in an investment. In 2015 the yield rate was 18%. This yield rate indicates that entrepreneurs seeking angel capital have a 1 in 5 chance of securing an angel investment. While a higher yield rate would be encouraging for entrepreneurs there is a question of the sustainability of a high rate since the historical average yield rate is 15%.

TABLE 2. Business Angels

| Year | Total | Ventures |
|------|----------------|----------|
| 2015 | \$24.6 billion | 71,100 |
| 2014 | \$24.1 billion | 73,400 |
| 2013 | \$24.9 billion | 70,730 |
| 2012 | \$22.9 billion | 67,030 |
| 2011 | \$22.5 billion | 66,230 |
| 2010 | \$20.1 billion | 61,900 |
| 2009 | \$17.6 billion | 57,225 |
| 2008 | \$19.2 billion | 55,480 |
| 2007 | \$26.0 billion | 57,120 |
| 2006 | \$25.6 billion | 51,000 |

Source: Center for Venture Research

FIGURE 2. Business Angels



Source: Center for Venture Research

While the venture capital industry plays an important role in the development of entrepreneurial ventures, that role is in the later stage financing of the venture (Figure 1). Institutional venture capital funds invest in larger deals at later stages, while angels invest smaller amounts in the earlier stage of development. In 2015 venture capital funds invested \$58.8 billion (Table 3) in 4,380 ventures, an average of \$13.4 million per investment (PricewaterhouseCoopers and National Venture Capital Association, 2016). Note that while the dollars invested by venture capitalists has steadily increased since 2009 the number of investments has increased at a smaller rate and thus the deal size has increased. With respect to targeted public policy it is critical to note that while angels and venture capitalists are both essential sources of funding for entrepreneurial ventures, they operate in very different markets. For angels, between 25% and 45% of their deals are in the seed and start-up stage (Table 4). In contrast, venture capitalists typically invest about 5% of their deals in this seed and start-up stage (Table 4). Likewise, as related to stage, the average deal size for angels is approximately \$350,000 while the deal size for venture capitalists is over \$13 million. Since angels invest in the seed and start-up stage, which is fraught with higher risk than later stage investing and a larger number of failures, angels invest in more than 10 times the number of deals as their venture capital counterparts. This higher investment frequency for angels and smaller deal size is a means of diversifying their risk. Lastly, note that angels invest from their personal net worth, which was often accumulated from cashing out of a successful entrepreneurial venture that they were a part of the founding team. Venture capitalists are essentially money managers who manage their limited partner’s (pension funds, endowments, family offices and high net worth individuals) wealth. As such venture capitalists have a fiduciary responsibility to their limited partners whereas angels need only answer to their own families for their investment decisions. To summarize, angel and venture capitalist occupy different parts of the entrepreneurial financing spectrum: angels invest in an earlier stage (the seed and start-up stage) in smaller deals with higher risk, have a longer time to exit, and manage their own money in comparison to their venture capital partners. However, these are based on averages. There exists angels who operate as venture capitalists and venture capitalist who manage a small fund and act more like angel investors.

TABLE 3. Venture Capital Funds

| Year | Total | Deals | Per Deal |
|-------------|----------------|--------------|-----------------|
| 2015 | \$58.8 billion | 4,380 | \$13.4 million |
| 2014 | \$49.5 billion | 4,378 | \$11.3 million |
| 2013 | \$29.7 billion | 4,106 | \$7.2 million |
| 2012 | \$26.9 billion | 3,770 | \$7.1 million |
| 2011 | \$28.4 billion | 3,673 | \$7.7 million |
| 2010 | \$21.8 billion | 3,277 | \$6.9 million |
| 2009 | \$17.7 billion | 2,795 | \$6.3 million |
| 2008 | \$28.3 billion | 3,808 | \$7.4 million |
| 2007 | \$30.7 billion | 3,918 | \$7.8 million |
| 2006 | \$25.5 billion | 3,416 | \$7.5 million |

Source: National Venture Capital Association

TABLE 4. The Truth About Early Stage
Seed and Start-up Financing
(% of Deals)

| Year | Angels | VC |
|-------------|---------------|-----------|
| 2015 | 28% | 4.2% |
| 2014 | 25% | 4.5% |
| 2013 | 45% | 5.6% |
| 2012 | 35% | 7.5% |
| 2011 | 42% | 10.8% |
| 2010 | 31% | 11.1% |
| 2009 | 35% | 11.4% |
| 2008 | 45% | 11.6% |
| 2007 | 39% | 10.6% |
| 2006 | 46% | 9.1% |

Sources: Center for Venture Research (Angels), National
Venture Capital Association (VC)

In terms of public policy, where seed and start-up capital is both critical and lacking for our nations entrepreneurial ventures, it is important that polices are targeted, implementable and measurable to determine effectiveness. Public policy monetary incentives can focus on the demand (entrepreneur) side to enhance growth and on the supply (investor) side to enhance the flow of seed and start-up capital to entrepreneurial ventures. Medium to high growth entrepreneurial ventures are the major job creators in the US economy. To facilitate the growth prospects of these entrepreneurial ventures from the demand side a growth tax credit would target those ventures who achieve a specific growth threshold. If growth in sales or employees exceeds the threshold a tax credit of the amount above the threshold would be available. An important stipulation is that the amount of the tax credit would have to be directed to the venture to enhance future growth. For the supply side two monetary incentives have the potential to increase the quality and quantity of investment opportunities at the seed and start-up stage. The first is a tax credit at the time of the investment. This direct tax credit would be available to qualified investors (angels and venture capitalists), be limited to the seed and start-up stage and be equal to a percentage of the total investment. The second incentive to enhance the flow of start-up capital and to leverage existing angel resources, a pool of capital, tentatively named the Archimedes Fund, would be created. This Archimedes Fund would be the source of leverage for angel investors. As an example, the creation of a \$100 million Archimedes Fund and a 3 to 1 leverage would increase the available start-up capital to \$400 million. In this scenario, in a seed or start-up stage investment of \$1,000,000 the angels/venture capitalists would provide \$750,000 and draw \$250,000 (3 to 1 match) from the Archimedes Fund. At the exit event, any capital gains would be redistributed to the Archimedes Fund, in the 3 to 1 ratio, for future investments. It is important to note that the Archimedes Fund is not a venture capital fund, but rather a matching fund for investments at the seed and start-up stage. As such, management of the fund would be substantially less burdensome than a classic venture capital fund. Also, since the

investor is assuming the major portion of the investment, and the risk, limited due diligence would need to be conducted by the fund. The investment by the fund can be staged so that the venture receives the funds in 2 to 3 stages based on milestones (such as job creation) reached. Two funds similar to the Archimedes Fund have been created in Europe. In contrast to a tax credit the Archimedes Fund would provide capital when needed (at the time of investment), be equivalent in size to a tax credit and have the potential to be self-funding given the 3 to 1 split on returns.

REFERENCES

Becker-Blease, J. and J. Sohl (2015) 'New Venture Legitimacy: the Conditions for Angel Investors', *Small Business Economics: An Entrepreneurial Journal*, 45(4), pp. 735-749.

Brophy, D.J. (1997), 'Financing the growth of entrepreneurial firms', in D. Sexton and R. Smilor (eds), *Entrepreneurship 2000*, Chicago, IL: Upstart Publishing Company, pp. 5-27.

PricewaterhouseCoopers and National Venture Capital Association (2016), '\$58.8 Billion in Venture Capital Invested Across U.S. in 2015, According to the MoneyTree Report', in *The MoneyTree™ Report by PricewaterhouseCoopers and the National Venture Capital Association based on data from Thomson Reuters*, <http://nvca.org/pressreleases/58-8-billion-in-venture-capital-invested-across-u-s-in-2015-according-to-the-moneytree-report-2/>

Sohl, J. (2003a), 'Angel investing: a market perspective', in J. May and E. O'Halloran (eds), *State of the Art: An Executive Briefing on Cutting Edge Practices in American Angel Investing*, Charlottesville, VA: Darden Business Publishing, pp. 2-14.

Sohl, J. (2003b), 'The private equity market in the USA: lessons from volatility', *Venture Capital: An International Journal of Entrepreneurial Finance*, 5(1), pp. 29-46.

Sohl, J. (2012), 'The Changing Nature of the Angel Market' in H. Lanström and C. Mason (eds), *Handbook of Research on Venture Capital: Volume 2*, UK: Edward Elgar Publishers, pp. 17-41.

Sohl, J. (2016), 'The Angel Investor Market in 2015: A Buyers' Market', Center for Venture Research, <https://paulcollege.unh.edu/sites/paulcollege.unh.edu/files/webform/Full%20Year%202015%20Analysis%20Report.pdf>